

MISCELLANEOUS NOTES

2: 35, t. 167, 1802; Fl. Ind. 3: 770, 1832 and it should be accepted. Initially, Roxburgh had based his *A. pubescens* on his own material; but later in "Flora Indica" he has equated his material with the above mentioned Rheede's figure.

We thank Dr. D. H. Nicolson, Smithsonian Institution, for his useful comments, though —

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not always in agreement with our conclusions, and sending us all the necessary literature. We also thank the Herbarium Curator, Royal Botanical Garden, Kew; Dr. B. V. Shetty, Laison Officer, Kew; Mr. H. B. Naithani, Forest Research Institute, Dehra Dun and Dr. (Mrs.) A. R. Daruwalla for help rendered in preparing this article.

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41. NEW RECORDS OF FRESHWATER ALGAE FROM
KARNATAKA STATE (INDIA)

(With two plates)

INTRODUCTION

Exploratory studies on freshwater algae in Karnataka State are mainly from North Kanara (Bharati 1965, 1966), Raichur (Bharati and Bongale 1975), Hassan (Bharati and Hegde 1980), Davanagere (Bongale and Bharati 1980), Shimoga (Bharati and Hegde 1982), Bijapur (Hegde and Bharati 1983), Mysore

(Gurudeva *et al.* 1983) and Dharwad (Hosmani and Bharati 1983) districts. Extensive collections were made from freshwater ponds and lakes in Shimoga District during the years 1978-1980. These samples included 24 algal taxa which are new records to the algal flora of Karnataka State. They also contained two taxa with major variations. A detailed systematic account of these taxa is given in the

present paper. Classification given by Prescott, 1951 is followed for Blue-green and Euglenoid members. Desmids are arranged after Sarma and Khan, 1980. The samples are preserved in 4% formaldehyde solution and are deposited in the Algal Laboratory, P. G. Department of Botany, Karnatak University, Dharwad under the Accession No.'s S. 46; V. 61 to S. 91; V. 157.

SYSTEMATIC ACCOUNT

(The abbreviations used in the text are: L = Length; W = Width; I = Isthmus; T. = Thickness and D = Diameter).

- Division : Cyanophyta
- Class : Myxophyceae
- Order : Chroococcales
- Family : CHROOCOCCACEAE
- Genus : *Glaucocystis* Itzigsohn 1866.

G. oocystiformis Prescott (Pl. 1; Fig. 11)
 Prescott, 1951; pl. 108, fig. 3, p. 475.
 L. 22-40 μm ; W 16-24 μm .
 Col. No. S. 78; V. 132.

- Order : Hormogoniales
- Sub-order : Heterocystineae
- Family : NOSTOCACEAE
- Genus : *Anabaena* Bory 1922.

A. papillosa Hirano (Pl. 1; Fig. 1)
 Hirano 1969; pl. 1, figs. 6&7, p. 12.
 D cell 5 μm ; D heterocyst 7 μm ; L akinete 25 μm ; W akinete 12 μm .
 Col. No. S. 69; V. 107.

Agrees with the type in shape and structure of vegetative cells, heterocyst and akinete; differs in having much smaller size (Type D cell 7.5-8.8 μm ; D heterocyst 10.5-11 μm ; L akinete 35-55 μm ; W akinete 15-16 μm).

- Division : Chlorophyta
- Class : Chlorophyceae
- Order : Ulotrichales

- Sub-order : Ulotrichineae
- Family : ULOTRICHACEAE
- Genus : *Ulothrix* Kuetzing 1833.

U. tenerrima Kütz. (Pl. 1; Fig. 2)
 Prescott 1951; pl. 6, fig. 12, p. 96.
 L cell 10 μm ; W cell 9 μm .
 Col. No. S. 62; V. 92.

- Order : Oedogoniales
- Family : OEDOGONIACEAE
- Genus : *Oedogonium* Link 1820.

O. cardiacum (Hass.) Wittrock (Pl. 1; Fig. 9)
 Prescott 1951; pl. 29, figs. 7&8, p. 168.
 L cell 70 μm ; W well 16 μm ; D zygospore 30 μm ; D oogonium 45 μm .
 Col. No. S. 61; V. 90.

O. santurcense Tiff. (Pl. 1; Fig. 10)
 Gonzalves 1981; fig. 9-215; p. 333.
 D zygospore without spines 25 μm ; with spines 28 μm ; D oogonium 32 μm .
 Col. No. S. 83; V. 145.

- Family : OOCYSTACEAE
- Genus : *Oocystis* Naegeli 1855.

O. pusilla Hansgirg (Pl. 1; Fig. 8)
 Prescott 1951; pl. 51, fig. 15, p. 246.
 L cell 35 μm ; W cell 11 μm ; L colony 53 μm ,
 W colony 34 μm .
 Col. No. S. 46; V. 61.

Differs in being almost double the size of the type (Type L cell 6-12 μm ; W cell 3.8-7.5 μm).

- Genus : *Schroederia* Lemmermann 1898.

S. indica Philipose (Pl. 1; Fig. 7).
 Philipose 1967; fig. 19, p. 90.
 L without spines 22 μm ; With spines 46-50 μm , W 4 μm ; L spine 12 μm .
 Col. No. S. 91; V. 157.

Differs in being smaller in dimension (Type L without spines 28-44 μm ; with spines 68-64 μm); inner side is almost straight instead of being concave as in the type.

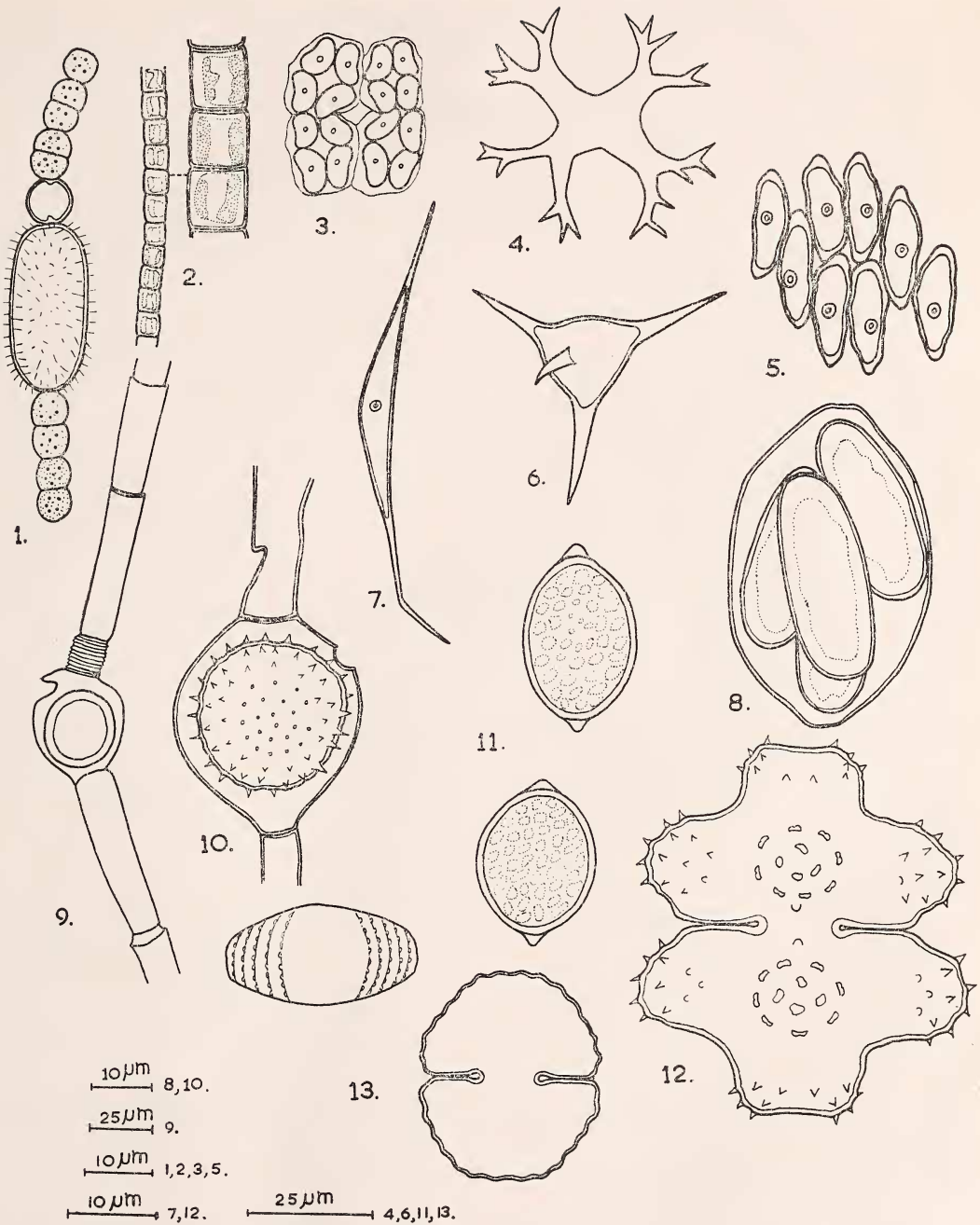


Fig. 1. *Anabaena papillosa* Hirano; Fig. 2. *Ulothrix tenerrima* Kütz; Fig. 3. *Crucigenia crucifera* (Wille) Collins; Fig. 4. *Tetraedron gracile* (Reinsch) Hansgirg; Fig. 5. *Scenedesmus arcuatus* Lemm. var. *capitatus* G. M. Smith; Fig. 6. *Tetraedron regulare* Kütz. var. *incus* Teil.; Fig. 7. *Schroederia indica* Philipose; Fig. 8. *Oocystis pusilla* Hansgirg; Fig. 9. *Oedogonium cardiacum* (Hass.) Wittrock; Fig. 10. *O. santurcense* Tiff.; Fig. 11. *Glaucocystis oocystiformis* Prescott; Fig. 12. *Euastrum ceylanicum* (W. et G.S. West) Krieg.; Fig. 13. *Cosmarium obtusatum* Schm. var. *undulatum* Fritsch et Rich.

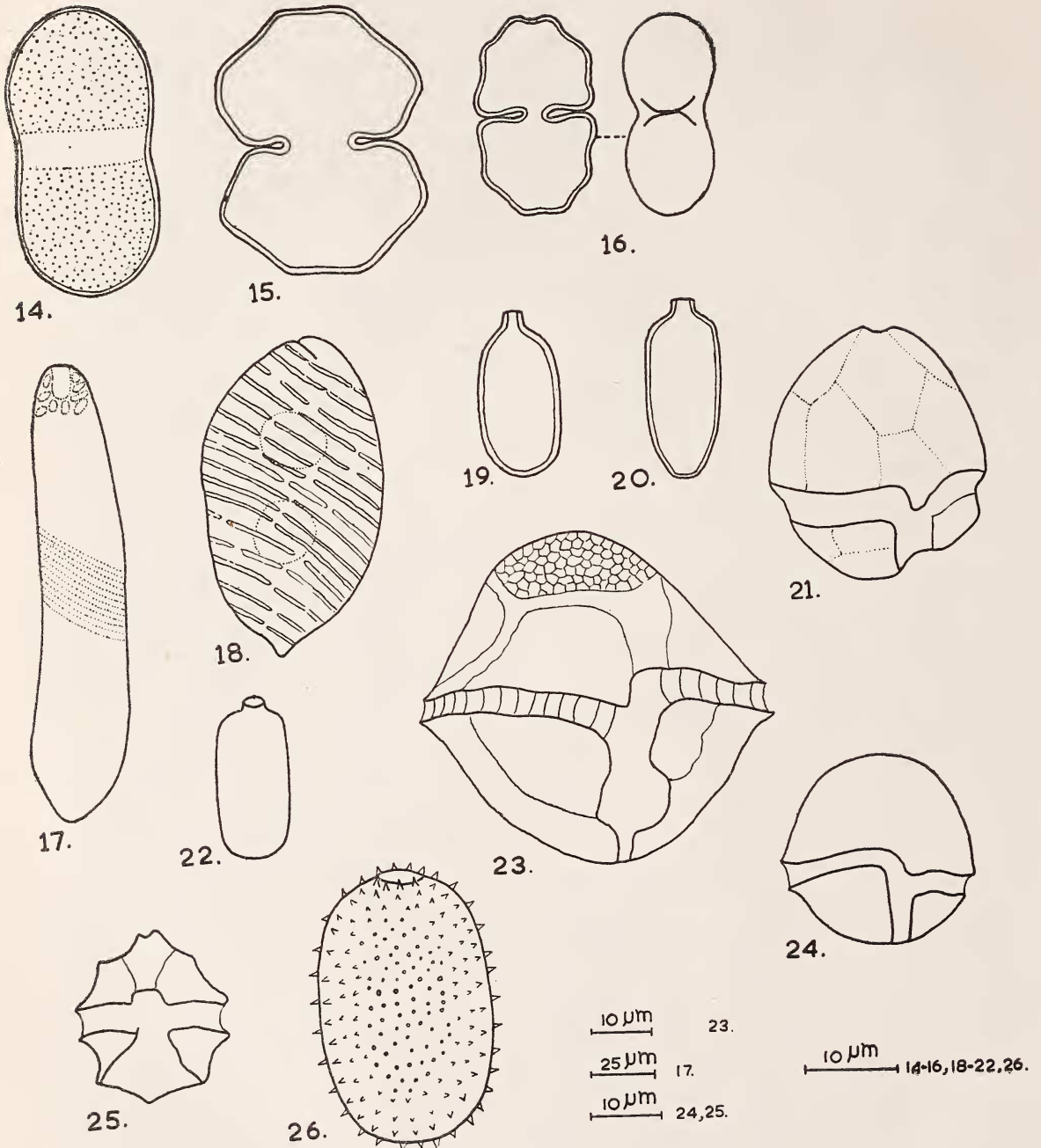


Fig. 14. *Cosmarium diplosporum* (Lund.) Lütkem.; Fig. 15. *C. pseudoretusum* Ducl. var. *africanum* (Fritsch) Krieg.; Fig. 16. *C. venustum* (Bréb.) Arch. var. *minus* (Wille) Krieg. et Gerl.; 17. *Euglena shrinagari* (Bhatia) Huber-Pest; Fig. 18. *E. oblonga* Schm.; Fig. 19. *Trachelomonas dubia* (Swir.) Deflandre; Fig. 20. *T. hexangulata* Swir.; Fig. 21. *Glenodinium penardiforme* (Lind.) Schiller; Fig. 22. *Trachelomonas cylindrica* Ehr.; Fig. 23. *Peridinium gatunense* Nygaard; Fig. 24. *Glenodinium pulvisculus* (Ehr.) Stein; Fig. 25. *Peridinium inconspicuum* Lemm.; Fig. 26. *Trachelomonas superba* (Swir.) Deflandre var. *duplex* Deflandre.

MISCELLANEOUS NOTES

- Genus : *Tetraedron* Kuetzing 1845.
T. gracile (Reinsch) Hansgirg (Pl. 1; Fig. 4).
 Philipose 1967; fig. 69b, p. 154.
 D without arms 14 μm ; D with arms 48 μm .
 Col. No. S. 91; V. 157.
 Differs in having a spiny outgrowth on the inner side of each branch of second order instead of a forked branch of third order.
- P. regulare** Kütz. var. **incus** Teil. (Pl. 1, Fig. 6).
 Prescott 1951; pl. 61, fig. 13, p. 269.
 L spine 20 μm ; D cell 20 μm .
 Col. No. S. 79; V. 133.
 Family : SCENEDESMACEAE
 Genus : *Scenedesmus* Meyen 1929
- S. arcuatus** Lemm. var. **capitatus** G. M. Smith (Pl. 1, Fig. 5).
 Prescott 1951; pl. 62, fig. 3, p. 275.
 L cell 17 μm ; W cell 6 μm .
 Col. No. S. 62; V. 92.
 Differs from the type in having irregular shaped cells. Wall is more thickened at the poles of cells. In this respect it resembles variety *capitatus* G. M. Smith described by Therezein and Coute 1977; pl. 6, fig. 1, p. 45.
- Genus : *Crucigenia* Morren 1830.
C. crucifera (Wille) Collins (Pl. 1; Fig. 3).
 Philipose 1967; fig. 149, p. 240.
 L cell 7 μm ; W cell 4 μm .
 Col. No. S. 74; V. 120.
 Class : Conjugatophyceae
 Order : Conjugales
 Family : DESMIDIACEAE
 Genus : *Euastrum* Ehrenberg 1832.
- E. ceylanicum** (W. et G. S. West) Krieg. (Pl. 1; Fig. 12).
 Scott and Prescott 1961; pl. 11, figs. 3-5, p. 24.
 L 40 μm ; W 80 μm ; I 6 μm .
 Col. No. S. 87; V. 149.
 Genus : *Cosmarium* Corda 1834.
- C. diplosporum** (Lund.) Lütkem. (Pl. 2; Fig. 14).
 Hirano 1967; pl. 9, fig. 5, p. 47.
 L 58 μm ; W 28 μm ; I 20 μm .
 Col. No. S. 88; V. 151.
- C. obtusatum** Schm. var. **undulatum** Fritsch et Rich (Pl. 1; Fig. 13).
 Grönblad and Croasdale 1971; pl. 6, fig. 80, p. 16.
 L 44 μm ; W 38 μm ; I 10 μm ; T 20 μm .
 Col. No. S. 78; V. 132.
- C. pseudoretusum** Duce. var. **africanum** (Fritsch) Krieg. et Gerl. (Pl. 2; Fig. 15).
 Grönblad and Croasdale 1971; figs. 69-71; p. 17.
 L 28 μm ; W 21 μm ; I 6 μm .
 Col. No. S. 82; V. 141.
- C. venustum** (Bréb.) Arch. var. **minus** (Wille) Krieg. et Gerl. (Pl. 2; Fig. 16).
 Grönblad and Croasdale 1971; pl. 6, fig. 82, p. 19.
 L 21 μm ; W 12 μm ; I 3 μm ; T 8-9 μm .
 Col. No. S. 91; V. 157.
 Division : Euglenophyta
 Class : Euglenophyceae
 Order : Euglenales
 Family : EUGLENACEAE
 Genus : *Euglena* Ehrenberg 1838.
- E. oblonga** Schm. (Pl. 2, Fig. 18)
 Philipose 1982; fig. 21, p. 591.
 L 66 μm ; W 40 μm .
 Col. No. S. 87; V. 149.
- E. shrinagari** (Bhatia) Huber-Pest. (Pl. 2; Fig. 17).
 Philipose 1982; figs. 13 a-d, p. 577.
 L 183 μm ; W 50 μm .
 Col. No. S. 55; V. 72.
 Genus : *Trachelomonas* Ehrenberg 1835.
- T. cylindrica** Ehr. (Pl. 2; Fig. 22)
 Prescott 1951; pl. 83, fig. 11 and 20, p. 412.
 L 17 μm ; W 7 μm .
 Col. No. S. 91; V. 157.
- T. dubia** (Swir.) Deflandre (Pl. 2; Fig. 19).
 Prescott 1951; pl. 85, fig. 9, p. 412.
 L 24 μm ; W 12 μm .